6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[OAR-2002-0086, FRL -]

RIN 2060-AG93

National Emission Standards for Hazardous Air Pollutants for Semiconductor Manufacturing

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action promulgates national emission standards for hazardous air pollutants (NESHAP) for new and existing semiconductor manufacturing operations located at major sources of emissions of hazardous air pollutants (HAP). The final standards implement section 112(d) of the Clean Air Act (CAA), which requires the Administrator to regulate emissions of HAP listed in section 112(b) of the CAA. The intent of the standards is to protect public health and the environment by requiring new and existing major sources to control emissions to the level attainable by implementing the maximum achievable control technology (MACT). The primary HAP that will be controlled with this action include hydrochloric acid (HCl), hydrogen flouride (HF), methanol, glycol ethers, and xylene. Exposure to these

substances has been demonstrated to cause adverse health effects such as irritation of the lung, eye, and mucous membranes; effects on the central nervous system; liver and kidney damage; and, possibly cancer. We do not have the type of current detailed data on each of the facilities and the people living around the facilities covered by today's final rule for this source category that would be necessary to conduct an analysis to determine the actual population exposures to the HAP emitted from these facilities and the potential for resultant health effects. Therefore, we do not know the extent to which the adverse health effects described above occur in the populations surrounding these facilities. However, to the extent the adverse effects do occur, and today's final rule reduces emissions, subsequent exposures will be reduced.

EFFECTIVE DATE: [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER].

ADDRESSES: Docket No. A-97-15 and E-Docket No. OAR-2002-0086 contain supporting information used in developing the standards for the semiconductor manufacturing source category. The docket is located at EPA Docket Center (Air Docket), U.S. EPA, 1301 Constitution Avenue, NW,

Room B108, Mail Code: 6102T, Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: Mr. John Schaefer, U.S. EPA, Office of Air Quality Planning and Standards, Emission Standards Division (C504-05), Research Triangle Park, NC 27711, telephone number (919) 541-0296, electronic mail (e-mail) address: schaefer.john@epa.gov.

SUPPLEMENTARY INFORMATION: Docket. The docket is an organized and complete file of all the information considered by the EPA in the development of the rule. The docket is a dynamic file because material is added throughout the rule development process. The docketing system is intended to allow members of the public and industries involved to readily identify and locate documents so that they can effectively participate in the rule development process. Along with the proposed and promulgated standards and their preambles, the contents of the docket will serve as the record in the case of judicial review. (See section 307(d)(7)(A) of the CAA.) The regulatory text and other materials related to the final rule are available for review in the docket or copies may be mailed on request from the Air and Radiation Docket and Information Center by calling (202)566-1742. A reasonable fee may be charged for

copying docket materials.

Electronic Docket Access. You may access the final rule electronically through the EPA Internet under the "Federal Register" listings at http://www.epa.gov/fedrgstr/. An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may use EPA Dockets at http://www.epa.gov/edocket/ to view public comments, access the index listing of the contents of the official public docket, and to access those documents in the public docket that are available electronically. Although not all docket materials may be available electronically, you may still access any of the publicly available docket materials through the docket facility in the above paragraph entitled "Docket." Once in the system, select "search," then key in the appropriate docket identification number.

Worldwide Web (WWW). In addition to being available in the docket, an electronic copy of the final rule will also be available on the WWW through the EPA's Technology Transfer Network (TTN). Following signature by the EPA Administrator, a copy of the final rule will be posted on the TTN's policy and guidance page for newly proposed or

promulgated rules at http://www.epa.gov/ttn/oarpg. The TTN provides information and technology exchange in various areas of air pollution control. If more information regarding the TTN is needed, call the TTN HELP line at (919) 541-5384.

Regulated Entities. Categories and entities potentially regulated by this action include those listed on the following table. This table is not intended to be exhaustive, but is just a guide to entities likely to be regulated by these standards. It lists the types of entities that may be regulated, but you should examine the applicability criteria in §§63.7181 and 63.7182 of the final rule to decide whether your facility is regulated by the standards. If you have any questions about whether your facility is subject to the standards, call the person listed in the preceding FOR FURTHER INFORMATION CONTACT section.

Categories and Entities Potentially Regulated by the Standards

Category	NAICS code	SIC code	Examples of regulated entities

Industrial . .	334413	3674	Semiconductor crystal growing facilities, semiconductor wafer fabrication facilities, semiconductor test and assembly facilities

Judicial Review. Under section 307(b) of the CAA, judicial review of the final rule is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit by [INSERT THE DATE 60 DAYS AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER]. Under section 307(d)(7)(B) of the CAA, only an objection to the rule which was raised with reasonable specificity during the period for public comment can be raised during judicial review. Moreover, under section 307(b)(2) of the CAA, the requirements established by this final action may not be challenged separately in any civil or criminal proceeding we bring to enforce these requirements.

Outline. The information presented in this preamble is organized as follows:

I. Background

A. What Is the source of authority for development of NESHAP?

Section 112 of the CAA requires us to list categories and subcategories of major sources and area

sources of HAP and to establish NESHAP for the listed source categories and subcategories. On July 16, 1992, major source categories covered by the NESHAP were listed under the Semiconductor Manufacturing industry group (57 FR 31576). Major sources of HAP are those that have the potential to emit considering controls, in the aggregate, 10 tons per year (tpy) or more of any HAP or 25 tpy or more of any combination of HAP.

B. What criteria do we use in the development of NESHAP?

Section 112 of the CAA requires that we establish NESHAP for the control of HAP from both new and existing major sources. The CAA requires the NESHAP to reflect the maximum degree of reduction in emissions of HAP that is achievable. This level of control is commonly referred to as MACT.

The MACT floor is the minimum control level allowed for NESHAP and is defined under section 112(d)(3) of the CAA. In essence, the MACT floor ensures that the standard is set at a level that assures that all major sources achieve the level of control at least as stringent as that already achieved by the better-controlled and lower-emitting sources in each source category or subcategory. For new sources, the MACT floor

cannot be less stringent than the emission control that is achieved in practice by the best-controlled similar source. The MACT standards for existing sources can be less stringent than the standards for new sources, but they cannot be less stringent than the average emission limitation achieved by the best performing 12 percent of existing sources in the category or subcategory (or the best performing five sources for categories with fewer than 30 sources).

In developing MACT, we also consider control options that are more stringent than the floor. We may establish standards more stringent than the floor based on consideration of the cost of achieving the emission reductions, any health and environmental impacts, and energy requirements.

II. What changes and clarifications have we made for the final standards?

In response to public comments received on the proposed standards, we made several changes in developing the final rule. Some of the changes had a direct effect on the MACT floors and emission limits, while other changes clarified the substantive requirements for the final rule. A more comprehensive summary of comments and

responses can be found in Docket No. A-97-15 and E-Docket No. OAR-2002-0086.

A. MACT Floors and Emission Limits

Process vents. When we developed the original MACT floors for process vents, we first determined the control efficiency, expressed as percent emission reduction, for each process vent for which we had inlet and outlet HAP concentration data. We then ranked the process vents based on the control efficiency achieved. Based on the best performing five process vents, we determined that thermal oxidation was used for emission control on four of them. Consequently, we selected thermal oxidation as the MACT floor. For the emission limit, we chose 98 percent control as representative of the level of control typically achieved by thermal oxidizers in practice. We decided not to base the emission limit on the reported performance of the thermal oxidizers because, in all cases, the inlet streams were high volume with low concentration of HAP. Under those conditions, measurements of the actual performance of a thermal oxidizer can be unreliable. As such, we believe choosing 98 percent control efficiency is more representative of what the thermal oxidizers can consistently achieve in

practice.

One commenter objected to this procedure, stating that the CAA directs us to consider only the actual performance of the sources used to establish the MACT floor. The commenter believed that we should revise the MACT floor and emission limits based on the reported performance of the five best performing sources. While we agree that the CAA directs us to base the MACT floors on actual performance, we believe that the test data do not accurately represent actual performance because of the high-volume, low-concentration nature of the emission streams.

In response to this comment, we decided to reevaluate the process vent MACT floor by considering organic and inorganic streams separately, as suggested by another commenter. By doing so, we can more accurately assess the performance of the different control devices used for these two types of emission streams.

Organic emission streams are almost always controlled by some type of thermal oxidation. As discussed above, measurements of thermal oxidizer performance can be unreliable for high-volume, low-concentration streams. Thus, we continue to believe that

the test data for organic HAP emission control we obtained for thermal oxidizers controlling semiconductor manufacturing process vents may not accurately portray actual performance. Thus, our original selection of a known achievable emission reduction percentage, as used for MACT in rules such as the Hazardous Organic NESHAP or HON (57 FR 19402), better represents actual performance as directed by the CAA. For the final rule, we retained 98 percent control as the emission limit for organic emission streams from process vents. We also retained the alternative emission limit of 20 parts per million by volume (ppmv) for organic emission streams.

For inorganic emissions from process vents, all the data we obtained showed that scrubbers were used to control those emissions. Unlike thermal oxidizers, scrubbers experience less erratic performance characteristics with high-volume, low-concentration emission streams. Accordingly, we were able to use the actual performance data to establish the MACT floor for the control of inorganic emissions from process vents. Again, using the top five best performing process vents, we established the MACT floor as 95 percent control. Based on the actual outlet emissions of those five

process vents, we established the alternative emission limit as 0.42 ppmv.

Storage tanks. We received comments on whether all of the tanks we included in the MACT floor analysis were the type of tank we intended to regulate through the rulemaking. The comments provided additional clarifying information on a number of the tanks we used to develop the MACT floor. Specifically, the comments questioned whether storage tanks for wastewater with very low concentration of HAP, waste storage tanks already covered under the Resource Conservation and Recovery Act (RCRA), and wastewater treatment tanks should have been included in the MACT floor analysis.

With the exception of wastewater treatment tanks, it was our intent to include all of these types of tanks in the affected source. However, based on the additional information provided by the industry, we have concluded that it was not appropriate to develop one MACT floor for all types of tanks due to the wide range of emissions from the each type of tank. Therefore, we developed separate MACT floors for chemical storage tanks (including waste storage tanks regulated under RCRA) and wastewater storage tanks.

We found that the level of control, based on the top five best performing sources in each data set, is the same for each type of tank. The level of control is to reduce emissions through the use of a scrubber and is identical to the level of control used to establish the MACT floor that was the basis of the emission limits in the proposed rule. However, based on other comments we received, we have decided not to use the same MACT floor procedure for the final rule.

Since the semiconductor industry storage tank emission streams will have similar characteristics to those of process vents (i.e., low pollutant concentration), rather than hydrochloric acid production industry storage tanks, we now believe the most representative similar sources for evaluating the MACT floor for storage tanks are the semiconductor industry process vents. Therefore, in response to the comments concerning our use of hydrochloric acid production industry storage tanks as the most representative similar source, we are adopting the process vent inorganic HAP emission limits for all storage tanks required to control emissions in the final rule.

The comments we received clarified that the reported

wastewater treatment tanks were not actually storage tanks but flow-through tanks used for certain continuous treatment processes such as pH adjustment. The tank volume merely allows for a buffer so that the treatment can be adequately carried out. All of the flow-through tanks in the data supplied by the industry are controlled by scrubbers. However, the industry also provided information that the purpose of all of these scrubbers was primarily to control ammonia odors. We do not believe that requiring scrubbers on flow-through tanks would result in significant reductions of HAP emissions, nor was it our intent in the proposed rule to regulate such tanks. Therefore, the definition of storage tank that we added to the final rule clarifies that flow-through tanks are not considered storage tanks for the purposes of the final rule.

We made an additional change for the final rule based on our revised storage tank MACT floor analysis. Because we eliminated several tanks from the data set used in the MACT floor analysis, the cutoff for the smallest size tank for which the final rule applies increased from 800 gallons to 1,500 gallons. We also revised our analysis of alternatives more stringent than

the MACT floor to reflect the increased tank size. We found that the cost per ton of additional emission reduction (approximately $300,000/ton) is still too great to warrant a more stringent level of control. We have also included a definition for “storage tank” to 40 CFR 63.7195 to clarify which tanks we intended to be subject to the final rule.

B. Compliance Options and Procedures

As part of our reevaluation of the MACT floors for process vents as described above, we also considered other compliance options to reflect our position on the performance of control devices. While we believe the performance of scrubbers controlling high-volume, low-concentration emission streams can be measured, we also recognize that control efficiency cannot always be reliably predicted for such streams. Also, facilities may choose to use a control device other than a scrubber which may be more difficult to measure performance. For these situations, we have included a compliance option to the final rule (see 40 CFR 63.7187(i)) that allows a source to perform a design evaluation of the add-on control device. If the inlet concentration of inorganic HAP is less than or equal to 20 ppmv, then the facility

may choose to perform a design evaluation of the control device that demonstrates the device is capable of achieving the required control efficiency.

We chose 20 ppmv as the cutoff for allowing a design evaluation because the data we obtained showed erratic performance measurement values below this level. The test results show control device performance decreasing as the inlet concentration decreases. However, the last entry shows that even at very low inlet concentrations, control device performance can sometimes be high. These data show the difficulty of measuring control device performance with high-volume, low-concentration inlet streams, and why we believe a design evaluation procedure is necessary. In the final rule, we have adopted the design evaluation procedure alternative from the Pharmaceuticals Production NESHAP (40 CFR part 63, subpart GGG).

During our review of the proposed rule, we realized that we inadvertently omitted Method 26A of 40 CFR part 60, appendix A, for analysis of emission streams for inorganic HAP. The final rule includes this test method.

III. Response to Comments on the Proposed NESHAP for Semiconductor Manufacturing

Comment: One commenter requested that EPA consider providing exemptions that would exclude insignificant sources from regulation. The commenter argued that the administrative burdens associated with the proposed rule are unwarranted for such sources. The commenter further argued that if additional add-on control devices would be required, it would result in insignificant HAP reductions. Another commenter suggested that storage tanks are insignificant HAP emission sources and should be excluded from the final rule.

Response: While we understand the commenters' concern with the burden imposed by regulation of sources with low annual emissions, the CAA does not provide a mechanism by which we can exempt such emission sources from the affected source solely on the basis of emissions. Additionally, some facilities in the semiconductor industry are characterized by multiple point sources of emissions, many of which have low annual emissions. If we exempted all such sources, there is a possibility that a large portion of the emissions from the facility could escape regulation. For these reasons, we are not exempting sources with low HAP emissions from the final rule.

Comment: One commenter contended that EPA's exemption of sources during periods of startup, shutdown, and malfunction is a violation of the requirement for continuous compliance. The commenter argued that EPA may only allow unavoidable deviations from emissions standards and must require that sources use best air pollution control practices during those periods.

Response: We disagree with the commenter's interpretation of the proposed rule. The General Provisions at 40 CFR 63.6(e)(1)(i) require that sources must at all times, including periods of startup, shutdown, and malfunction, maintain the affected source in a manner such that emissions are minimized to the level required by the relevant standard. That section further clarifies that this means to "meet the emission standards or comply with the startup, shutdown, and malfunction plan." The purpose of the startup, shutdown, and malfunction plan (SSMP), as described in 40 CFR 63.6(e)(3)(i)(A), is to:

> [e]nsure that, *at all times*, the owner or operator operate and maintain affected sources, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions *to at least the levels required by the relevant standards*.

A properly written SSMP does not allow the source to emit at whatever levels they want merely because they comply with what they have written in the SSMP. Under the SSMP, the source must detail the procedures that will be used to maintain emissions within the limits set by the rule during periods of startup, shutdown, and malfunction. In this case, the SSMP is analogous to parameter monitoring for evaluating continuous compliance of add-on control devices. Just as maintaining the temperature of a thermal oxidizer at the proper operating temperature as determined during the initial compliance demonstration is deemed to be compliance with the emission limits, following the SSMP is deemed to be compliance with emission limits during periods of startup, shutdown, and malfunction.

Comment: One commenter was concerned with the burden of compliance as proposed at facilities that are classified as major sources of HAP due to processes other than semiconductor manufacturing and that only conduct minimal production of semiconductors for research and development purposes. The commenter requested that EPA add a de minimis threshold for rule applicability.

Response: Through our data gathering efforts, we

found that research and development activities are often integrated into the production activities at semiconductor manufacturing facilities. Such research and development activities are often used in actual production because the technology upon which the manufacturing process is based undergoes substantial change every few years. This extremely short technology life cycle results in constant research and development efforts geared toward developing and implementing new manufacturing technologies. The continual research and development efforts result in an ongoing integration of new technologies into mainstream production operations. New manufacturing operations are typically not developed apart from existing manufacturing operations, but rather side-by-side with them. The new operations are gradually integrated into mainstream production. As such, the majority of research and development work is done in a manner nearly indistinguishable from the existing manufacturing process.

Given the manner in which research and development activities are integrated into production, there is no bright line distinction between research and development and production. They are located in the same clean rooms

and, more importantly, share the same exhaust plenums and emission control devices. For these reasons, the research and development activities are considered part of the production process and are within the affected source.

We note, however, that the research and development operations have to be located at a semiconductor manufacturing facility to be considered a semiconductor manufacturing process unit. Therefore, research and development activities that are not used to produce semiconductors for commerce, or produce them only for captive use, would not be semiconductor manufacturing process units and would not be subject to the final rule. Nor would research and development operations that are stand alone activities (that is, not integrated into the production process) be subject to the final rule. We modified 40 CFR 63.7182(b) of the final rule to clarify this point.

Comment: One commenter argued that EPA must regulate all major sources and believed the proposed rule fails to do this because it does not apply to sources that installed add-on control devices after the facility was designed and commenced operation. The commenter

interpreted the court's ruling in Alabama Power (Alabama Power Co. v. US EPA, 636 F.2d 323 (D.C. Cir. 1979)) as specifying that controls must be incorporated into the original design of the facility in order to be considered when calculating the facility's potential to emit.

Response: We believe the commenter incorrectly interpreted the court's decision in Alabama Power. That case addressed, in part, the interpretation of "potential to emit" in the definition of major source in the prevention of significant deterioration (PSD) regulations (also part of the CAA, but unrelated to hazardous air pollutant regulations). The court found that EPA "must look to the facility's 'design capacity' a concept which not only includes a facility's maximum productive capacity . . . but also takes into account the anticipated functioning of the air pollution control equipment designed into the facility." (Alabama Power, 636 F.2d at 353). The commenter has interpreted this statement to mean that only controls that were part of the original design of the facility can be taken into account when calculating potential to emit. Nowhere does the court state or even imply such a result in its decision. The commenter failed to take into account that

the PSD regulations define a preconstruction permitting process. Because the air emission sources under consideration in the PSD process have yet to be constructed, the permitting process must necessarily deal with only designs of future air emission sources. We believe the court's language reflects only this aspect of the PSD review process, not the interpretation given by the commenter.

The NESHAP program, on the other hand, is concerned with air emission sources already in existence, as well as new sources. If we were to apply the wording of Alabama Power to the NESHAP program, our interpretation would be that the phrase "designed into the facility" means any air emission control equipment in use at the facility at the time a major source determination must be made, not the interpretation given by the commenter. This is reflected in our memorandum[1] on the interim policy on federal enforceability of limitations on potential to emit. In this memorandum, we stated:

> [T]he EPA regulations provide that "controls" (i.e., both pollution control equipment and

[1] "Release of Interim Policy on Federal Enforceability of Limitations on Potential to Emit" (January 22, 1996) (available at http://www.epa.gov/ttn/oarpg/t5/memeoranda/pte122.pdf).

> operational restrictions) that limit a source's maximum capacity to emit a pollutant may be considered in determining its potential to emit. Historically, large numbers of new or modified sources that otherwise would be subject to PSD and NSR permitting requirements have limited their PTE in order to obtain “synthetic minor” status and thereby avoid major source requirements. With the advent of operating permit programs under Title V and the MACT program under section 112, many sources that otherwise would be subject to these new requirements under the Clean Air Act Amendments of 1990 also have obtained, or plan to obtain, PTE limits to avoid coverage.

The phrase “have obtained, or plan to obtain” implies that these sources will be adding controls to limit emissions. Since these controls would be added to an existing facility, they could not have been designed into the facility before it was ever constructed. Thus, the commenter's interpretation is incorrect, and we have made no changes for the final rule in response to this comment.

Comment: One commenter requested that a definition for “process vent” be added to the final rule. Additionally, the commenter further argued that if EPA cannot exclude research and development vents from the definition of process vents, then the final rule must provide an exemption for research and development activities consistent with section 112(c)(7) of the CAA.

A second commenter was also concerned with the absence of a definition for process vent. The commenter pointed out that the absence of a definition results in ambiguity regarding compliance obligations. The commenter also suggested that a process vent definition would allow EPA to exclude categories of emission points with negligible emissions potential.

Response: We agree that a definition of "process vent" would be beneficial in determining which emission points at a semiconductor manufacturing facility are subject to the emission limitations in 40 CFR 63.7184 of the final rule. Because the affected source is defined in terms of semiconductor manufacturing process units (see 40 CFR 63.7182), the process vents subject to regulation necessarily must originate from these process units. Therefore, we have included the following definition to 40 CFR 63.7195: Process vent means the point at which HAP emissions are released to the atmosphere from a semiconductor manufacturing process unit or storage tank by means of a stack, chimney, vent, or other functionally equivalent opening. The HAP emission points originating from wastewater treatment equipment, other than storage tanks, are not considered

to be a process vent, unless the wastewater treatment equipment emission points are connected to a common vent or exhaust plenum with other process vents.

We do not believe any of the other process vent exemptions requested by these commenters are appropriate. Research and development operations are considered to be part of the overall semiconductor manufacturing process unless they are stand alone operations. We believe that relief valve discharge points, process analyzers, and conservation vents can be adequately connected to process vent exhaust ducts, if this is not already the case. Emergency electrical generators are not included in the definition of semiconductor manufacturing process unit, so there is no need to exclude them from the definition of process vent.

Comment: One commenter was concerned about the broad definition of “control device” in 40 CFR 63.981(a). According to the commenter, this paragraph could be interpreted to mean that certain devices that are part of the process (not an add-on control device) would be subject to the rule.

Response: We agree that there are certain devices used by the semiconductor industry that could be

construed as control devices but are in fact an inherent part of the process, and that clarification is necessary in the final rule. In response, we have included the following definition to 40 CFR 63.7195: Control device means a combustion device, recovery device, recapture device, or any combination of these devices used for the primary purpose of reducing emissions to comply with this subpart. Devices that are inherent to a process or are integral to the operation of a process are not considered control devices for the purposes of this subpart, even though these devices may have the secondary effect of reducing emissions.

Comment: One commenter objected to the EPA's approach of using area source information to establish the MACT floor as being inconsistent with section 112(d)(3) of the CAA. The commenter believed that area sources are not part of the semiconductor manufacturing category for major sources and should not be relied on for establishing the MACT floor.

Response: Section 112(a)(1) of the CAA defines major source as "any stationary source or group of stationary sources . . . that emits or has the potential to emit considering controls, in the aggregate, 10 tpy or

more of any hazardous air pollutant or 25 tpy or more of any combination of hazardous air pollutants." An area source is then defined in section 112(a)(2) as any stationary source that is not a major source. The facilities which we used to establish the MACT floor were "synthetic minor" sources, meaning that they reduced their potential to emit below the major source threshold (here, through the use of add-on control devices and material substitution). Without these controls, these facilities would have the potential to emit at major source levels.

We disagree that the MACT floors must be based solely on major sources of HAP emissions. Section 112(d)(1) of the CAA directs us to promulgate rules for categories of major and area sources of HAP emissions. Then, section 112(d)(2) mandates that these standards "shall require the maximum degree of reduction in emissions . . . achievable for new or existing sources." Section 112(d)(3) specifies how we are to determine the maximum degree of emission reduction and describes it as "not less stringent than the emission control that is achieved in practice by the best controlled similar source" for new sources, and for existing sources

describes it as “the average emission limitation achieved by the best performing 12 percent of the existing sources . . ..” Even though Congress saw fit to distinguish between major and area sources in many other places in section 112 of the CAA, they specifically did not require that the floor be based on major sources. Throughout section 112(d), Congress simply used the term “source.” We interpret this to mean that Congress left it to our discretion to determine the most appropriate sources on which to base the MACT floors. Accordingly, for the proposed rule we used both major sources and synthetic minor sources as the basis of the MACT floors. We believe our interpretation of section 112(d) of the CAA is correct, and no changes were made for the final rule as a result of these comments.

Comment: One commenter contended that EPA may not set floors for process vents based on the technology of thermal oxidizers, but must identify the best performing process vents, determine their actual performance, and calculate floors based on the average of that performance. Another commenter questioned the validity of establishing a single concentration for total HAP emissions from process vents and requested that different

control and concentration limits be set for the organic HAP and inorganic HAP emissions.

Response: After reviewing the procedure we used to establish the MACT floors in light of these comments, we agree that we should first establish a MACT floor for both organic and inorganic HAP emissions from process vents (other than storage tanks) and then evaluate the appropriate emission limits for each. Based on a revised analysis, we calculated the MACT floor for organic process vents to be 98 percent control, or an organic HAP emission limit of 20 ppmv, which were the emission limits in the proposed rule. For inorganic HAP, we calculated the MACT floor to be 95 percent control or an inorganic emission limit of 0.42 ppmv. We have written 40 CFR 63.7184 of the final rule to reflect these revised MACT floors.

Comment: One commenter had several concerns with the approach used to establish the MACT floor for storage tanks. The commenter believed that area source semiconductor manufacturing facilities and HCl production sources are not part of the major source semiconductor manufacturing category and should not have been relied on to set the storage tank MACT floor. Two commenters

requested that any storage tank limits should be limited specifically to tanks storing HCl or hydrofluoric acid (HF).

Another commenter argued that EPA improperly based floors for storage tanks over 800 gallons on the performance of scrubbers. The commenter stated that EPA must identify the relevant best performing storage tanks, determine their actual performance, and recalculate floors for storage tanks over 800 gallons based on the average of that performance. The commenter also contended that EPA must conduct beyond-the-floor analysis for storage tanks under 800 gallons to determine the maximum degree of emissions reductions achievable.

One commenter argued that any final rule should exclude hazardous waste storage tanks and vessels storing wastewater. The commenter contended that EPA has not made the required MACT finding for hazardous waste storage tanks and vessels storing wastewater. The commenter further argued that hazardous waste storage vessels and vessels storing wastewater have low HAP concentrations and do not warrant regulation beyond RCRA requirements.

Response: We agree that the procedure outlined by

these commenters is the best procedure for determining the MACT floors, assuming that the appropriate data are available. In the case of storage tanks, we had no such data. The only data the industry could provide to us were the size of the tank, contents of the tank, and whether emissions from the tank were controlled. No performance data were available for the tank emission controls used by the semiconductor industry. For these reasons, we used data on the performance of the most representative similar source for which data were available, which were for scrubbers on HCl storage tanks obtained from the HCl manufacturing industry. Based on these comments, we now believe it is more appropriate to develop separate MACT floors for the different types of storage tanks in the semiconductor industry, and that it was inappropriate to use storage tanks from the HCl production industry as the most representative similar source.

It was always our intent to include all storage and wastewater tanks containing HAP in the affected source. However, based on the additional information provided by the industry, we have concluded that it was not appropriate to develop one MACT floor for all types of

tanks due to the wide range of emissions from the each type of tank. While we cannot exempt an emission source solely due to the low annual emissions from that source, we thought that the MACT floor level of control could be influenced by the level of emissions from each type of tank and the existing regulations (i.e., RCRA) to which some tanks may be subject. Therefore, we developed separate MACT floors for chemical storage tanks (including waste storage tanks regulated under RCRA), wastewater storage tanks, and wastewater treatment tanks.

We found that the MACT floor level of control for both chemical storage tanks and wastewater storage tanks, based on the top five best performing sources in each data set, is the same for each type of tank. The level of control is to reduce emissions through the use of a scrubber and is identical to the level of control used to establish the emission limits as proposed. However, based on other comments we received, we decided not to use the same procedure to establish the emission limits for the final rule. For wastewater treatment tanks, we determined the MACT floor level of control to be no emissions reduction.

The data set we used to establish the original MACT

floor for storage tank emissions included the type of control (e.g., scrubbers), but no information on the performance of the control devices or pollutant concentration in the outlet streams. In order to establish emission limits, we previously relied on the performance of controls used by the HCl production industry on HCl storage tanks. We used these data because the majority of tanks reported by the semiconductor industry contained HCl as well. We considered the HCl production industry data to be the most representative similar source for which we had data.

The comments we received questioned whether these storage tanks were representative, similar sources. In response to these comments, we further investigated the similarities and differences of the semiconductor manufacturing industry storage tanks and the HCl production industry tanks. We first determined that there is a large size differential between the tanks used by the semiconductor industry and those used by the HCl production industry. The largest reported semiconductor industry storage tank was 16,000 gallons, and most were less than 10,000 gallons. In contrast, most of the storage tanks reported by the HCl production industry

ranged from 200,000 gallons to over 2 million gallons. We then determined that the HCl stored by the semiconductor industry was often diluted, while the HCl production industry almost exclusively stored concentrated HCl. Based on the larger tank size and the higher concentration of material stored, the emission streams from the HCl production industry storage tanks will have a considerably higher pollutant concentration than from the semiconductor industry storage tanks. We believe this is a more important consideration when establishing emission limits than simply looking at the similarity of the material stored. Thus, we expect that the emissions streams from the semiconductor manufacturing industry storage tanks will have a very low concentration of pollutants.

Since the semiconductor industry storage tank emission streams will have similar characteristics to those of process vents (i.e., low pollutant concentration), we now believe the most representative similar sources for evaluating the MACT floor for storage tanks are the semiconductor industry process vents. Therefore, in response to the comments concerning our use of HCl production industry storage tanks as the most

representative similar source, we are adopting the process vent inorganic HAP emission limits for storage tanks in the final rule.

We also agree that we should have given further consideration to controls more stringent than the MACT floor for storage tanks less than 800 gallons (now 1,500 gallons in the final rule as discussed below) and wastewater treatment tanks. The MACT floor for both of these types of tanks was determined to be no control. However, controls more stringent than the MACT floor (i.e., scrubbers) are technically feasible as demonstrated by the data provided by the industry on tanks greater than 1,500 gallons.

In order to include emission limits more stringent than the MACT floor level of control in the final rule, they must be feasible on both a technical and cost basis. Technical feasibility is assumed based on similar control on larger tanks as reported by the industry. To evaluate cost feasibility, we estimated the HAP emissions from a 1,500 gallon tank containing concentrated HCl, assuming one complete turnover per day. These parameters will result in the maximum amount of HAP emissions from the tank that we would expect for the semiconductor

manufacturing industry. We then estimated the cost of a scrubber to control these emissions by 99 percent. Finally, we calculated the cost per ton of additional HAP emission reduction achieved above the MACT floor level of control, which was more than $285,000 per ton. Based on this result, we considered this level of control to be infeasible on a cost basis and did not require emission control more stringent than the MACT floor for storage tanks less than 1,500 gallons or wastewater treatment tanks in the final rule.

We made an additional change for the final rule based on our revised storage tank MACT floor analysis. Because we eliminated several tanks from the data set used in the MACT floor analysis, the cutoff for the smallest size tank for which the final rule applies increased from 800 gallons to 1,500 gallons.

While the storage tanks that were used to establish the MACT floor level of control stored either HCl or HF, we believe this level of control is applicable to any material stored by a semiconductor manufacturing facility. Therefore, we do not believe that the emission limits must necessarily be limited to these two chemicals, as suggested by one of the commenters.

In our final analysis, we determined that the level of control already existing on waste storage tanks regulated under RCRA is equivalent to the storage tank MACT floor level of control. We also determined that the MACT floor for wastewater treatment tanks was no emissions reduction. Accordingly, we excluded both types of tanks from any requirements in the final rule. We added the following definition (based on the definition of "tank" in 40 CFR 63.901, (subpart OO–National Emission Standards for Tanks–Level 1) and 40 CFR 63.1101 (subpart YY–National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards)) for "storage tank" to 40 CFR 63.7195 that clarifies which tanks we intended to be covered under the final rule: Storage tank means a stationary unit that is constructed primarily from nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to hold an accumulation of liquids or other materials used in or generated by a semiconductor manufacturing process unit. The following are not storage tanks for the purposes of the final rule:

- Tanks permanently attached to motor vehicles such as trucks, railcars, barges, or ships;
- Flow-through tanks where wastewater undergoes treatment (such as pH adjustment) before discharge, and are not used to accumulate wastewater;
- Bottoms receiver tanks; and
- Surge control tanks.

Comment: One commenter reiterated a previous request for EPA to delist the Semiconductor Manufacturing source category and provided information to support their request. The commenter claimed that this information shows that there will be no stand alone semiconductor manufacturing facilities. Therefore, since EPA listed this category on the MACT source category list at a time when there were stand alone facilities that were major sources, the basis for listing the category no longer exists. The commenter cited the preamble language from the initial source category listing notice (57 FR 31576, July 16, 1992) and the first notice revising the list (61 FR 28200, June 4, 1996) to support their interpretation of when a category should be included on the source category list. The commenter stated that if a stand

alone major source did come into existence in the future, EPA could promulgate a MACT standard at that time. Additionally, the commenter pointed out that case-by-case MACT determinations under section 112(g) of the CAA could also be used to control emissions from such a source.

The commenter also pointed to other EPA actions to support their position. The commenter noted that EPA guidance issued after the ***National Mining Association*** court case (National Mining Association v. US EPA, 59 F.3d 1351 (D.C. Cir. 1995)) states that section 112(d) standards should be applied to source categories that contain stand alone major sources or that have sources "commonly located" at major source facilities. The commenter also noted that EPA, in promulgating MACT standards for industrial process cooling towers (IPCT), had found that co-location of an IPCT on a major source site is not sufficient to trigger applicability of the rule, rather, the IPCT must be co-located and an integral part of the facility.

The commenter disagreed with EPA's interpretation that a source category delisting can proceed only under section 112(c)(9) of the CAA. The commenter believed that EPA has a non-discretionary duty under section

112(c)(1) to periodically revise the list in response to new information. Under the provisions specified in section 112(c)(1), which the commenter believes are wholly separate from the delisting procedure in section 112(c)(9), EPA has the authority and the latitude to remove a previously listed source category from the MACT standard source category list.

Response: In the preamble to the proposed rule for semiconductor manufacturing, we acknowledged receipt of the pre-proposal request to remove the Semiconductor Manufacturing source category from the list of source categories and indicated we would respond in the final rulemaking (67 FR 30852, May 8, 2002).

Section 112(d)(1) of the CAA directs EPA to promulgate regulations for categories of major sources of HAP emissions. We interpret section 112(a) as requiring consideration of all emissions sources in determining major source status. Thus, if a source emits 10 tons or more per year of any single HAP or 25 tons or more per year of any combination of HAP, it is a major source. Similarly, if a source is co-located with sources in other categories and the aggregate emissions of the combined sources is 10 or more tons per year of a single

HAP or 25 tons or more per year of any combination of HAP, that group of co-located sources is a major source. This interpretation is consistent with the legislative history on the definition of “major source,” which indicates clearly that all portions of a major source are subject to MACT even if, standing alone, individual portions of that source would not qualify as major. [136 Cong. Rec. S. 16927 (October 27, 1990)].

The definition of major source also includes provisions to assure that stationary sources which would otherwise be subject to the emissions standards are not excluded from control requirements as the result of arbitrary subdivision or description of the source. A stationary source potentially subject to an emissions standard because it emits a listed air pollutant is to be defined to include all emission points and units of such source located within a contiguous area and under common control.

Because the statute instructs EPA to consider co-located sources as major sources, we believe we must list and promulgate standards for source categories that are major sources as a result of co-location. Accordingly, when we published the initial list of source categories,

we “includ[ed] categories of major sources where there was reasonable certainty that at least one stationary source is a major source or where sources in the category [were] commonly located on the premises of major sources.” (57 FR 31576, July 16,1992). The EPA continues to believe that major source determinations must be based on facility-wide emissions and that a major source can be either a stand alone major source or co-located with other sources that in combination emit or have the potential to emit over the major source threshold.

We disagree with the commenter’s reading of the preamble to the IPCT MACT standard. In promulgating the MACT standard, we said that even though no individual source in the IPCT source category is itself a major source, we promulgated a MACT standard in light of IPCT being co-located with other major sources of HAP (59 FR 46339, September 8, 1994). The IPCT MACT provides clear precedent both for promulgating a semiconductor MACT standard and to not remove the Semiconductor Manufacturing source category from the list of source categories.

Accordingly, because section 112(d) requires EPA to

promulgate MACT standards for all major sources, and since the Semiconductor Manufacturing source category is a category of major sources, albeit, because existing sources are co-located with other sources that in combination emit or have the potential to emit over the major source thresholds, EPA will not revise the list of source categories to remove the Semiconductor Manufacturing source category.

Finally, we also believe this source category is not static and that changes (either economic or process) may trigger operational changes that could result in increased HAP emissions. Thus, it is not entirely clear whether those sources that are currently "synthetic area sources" will continue to be "synthetic area sources." And accordingly, it is not inconceivable that the MACT standards promulgated today will eventually be applicable to more than the one currently co-located facility. In addition, there is always the possibility of new major sources being constructed in the future.

Comment: One commenter requested that EPA reconsider delisting this source category using *de minimis* principles under section 112(c)(1) of the CAA. The commenter proposed exemption of all nonmajor

semiconductor process units from regulation in a manner consistent with the approach to applicability in section 112(g) of the CAA.

Response: The commenter's suggested de minimis cutoff levels are inconsistent with the CAA's prescribed method for determining the MACT floor. We do not believe that the CAA authorizes exempting an emission source solely due to the low annual emissions from that source. The outlet concentration limits for both inorganic and organic emissions serve as the minimum applicable limits for the affected sources. If the outlet concentration is below the applicable emission limit, no controls are required to demonstrate compliance.

IV. What are the final standards?

A. What is the source category?

The Semiconductor Manufacturing source category includes operations used to manufacture p-type and n-type semiconductors and active solid-state devices from a wafer substrate. Research and development activities located at a site manufacturing p-type and n-type semiconductors and active solid-state devices are integrated into the manufacturing process (that is, they are not stand alone operations), and these are included

in the definition of semiconductor manufacturing. Examples of semiconductor or related solid-state devices include semiconductor diodes, semiconductor stacks, rectifiers, integrated circuits, and transistors. The source category includes all manufacturing from crystal growth through wafer fabrication, and test and assembly.

The crystal growing stage is where crystalline wafers of silicon or other specific semiconducting materials are manufactured for use as the substrate in the wafer fabrication process. Crystal growing begins with storage of the raw materials (usually trichlorosilane, which is refined from ordinary sand) and ends with the final polishing of a wafer.

The wafer fabrication process is where a group of integrated circuits are created on the wafer through a series of pattern-forming processes. Wafer fabrication begins at the point where the wafer receives its first protective oxidative layer and ends when a functional integrated circuit or circuits have been created on a wafer.

The test and assembly process is the final step in the integrated circuit manufacturing process and begins when a wafer is cut into individual chips. The chips are

then mounted onto a metal frame, connected to the leads, and enclosed in a protective housing. The process endpoint is the last test performed at an assembly facility to verify proper function of a completed integrated circuit housing.

B. What is the affected source?

We define an affected source as a stationary source, group of stationary sources, or part of a stationary source to which specific NESHAP apply. Within a source category, we select the specific emission sources (emission points or groupings of emission points) that will make up the affected source for that category. To select these emission sources, we mainly consider the constituent HAP and quantity emitted from individual or groups of emission points.

For the Semiconductor Manufacturing source category, the affected source includes the collection of all semiconductor manufacturing units used to manufacture p-type and n-type semiconductors and active solid-state devices from a wafer substrate, research and development activities integrated into the manufacturing process at a semiconductor manufacturing site, and storage tanks located at a major source.

A semiconductor manufacturing process unit is the equipment assembled and connected by duct work or hard piping including: furnaces and associated unit operations; associated wet and dry work benches; associated recovery devices; feed, intermediate, and product storage tanks; product transfer racks and connected ducts and piping; pumps, compressors, agitators, pressure-relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems; and control devices. We have identified three distinct processes used in the manufacture of these semiconductors and devices: crystal growing, wafer fabrication, and assembly and test. A semiconductor manufacturing unit is typically engaged in one of these processes.

C. What are the emission standards?

Emission limits. We are promulgating standards that regulate HAP emissions from process vents and storage tank vents at semiconductor manufacturing facilities. The standards are the same for existing and new sources. All major sources must reduce process vent organic HAP outlet concentrations by 98 percent from their uncontrolled levels and reduce uncontrolled inorganic HAP

outlet concentrations by 95 percent. As an alternative, process vents may be controlled to a level below 20 ppmv organic HAP and 0.42 ppmv inorganic HAP. In addition, all major sources must reduce storage tank vent HAP outlet inorganic HAP concentrations by 95 percent from their uncontrolled levels. As an alternative, storage tank vents may be controlled to a level below 0.42 ppmv inorganic HAP.

General Provisions. The General Provisions (40 CFR part 63, subpart A) also apply to you as outlined in the final rule. The General Provisions codify certain procedures and criteria for all 40 CFR part 63 NESHAP. The General Provisions contain administrative procedures, preconstruction review procedures for new sources, and procedures for conducting compliance-related activities such as notifications, reporting, and recordkeeping, performance testing, and monitoring. The final rule refers to individual sections of the General Provisions to emphasize key sections that you should be aware of. However, unless otherwise specifically excluded in the final rule, all of the relevant General Provisions requirements apply to you.

V. When must I comply with the final rule?

Existing semiconductor manufacturing affected sources must comply with the final rule no later than 3 years after [INSERT DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER]. The effective date is [INSERT THE DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER]. New or reconstructed affected sources must comply upon start-up or [INSERT THE DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL_REGISTER], whichever is later. Details of the compliance requirements can be found in the General Provisions, as outlined in Table 2 to the subpart.

VI. What are the testing and initial continuous compliance requirements?

In addition to the specific testing and monitoring requirements specified below for the affected source, the final rule adopts the testing requirements specified in 40 CFR 63.7.

We are promulgating testing and initial and continuous compliance requirements that are, where appropriate, based on procedures and methods that we have previously developed and used for sources similar to those for which standards are being promulgated today. For example, we are promulgating compliance determination

procedures, performance tests, and test methods to determine what level of control a process vent needs to achieve to demonstrate compliance with the standards. We are promulgating compliance procedures to determine process vent and storage tank vent flow rates and HAP concentrations. The promulgated test methods parallel what we have used for process vents in previous organic HAP emissions standards (e.g., the HON) and inorganic HAP emission standards. For measuring vent stream flow rate, you must use Method 2, 2A, 2C, 2D, 2F, or 2G of 40 CFR part 60, appendix A. For measuring total vent stream organic HAP concentration to determine whether it is below a specified level, you must use Method 18 of 40 CFR part 60, appendix A. For measuring the total HAP concentration of emission streams with inorganic HAP to determine if it is below a specified level, you must use Method 320 of 40 CFR part 60, appendix A. For measuring inorganic HAP that are hydrogen halides, such as HCl or HF, you must use Method 26A of 40 CFR part 60, appendix A.

Additionally, we are requiring initial performance tests for all process vent and storage tank vent HAP emission control devices other than flares and certain

boilers and process heaters. For vents controlled using flares, we are not requiring performance tests because we have developed design specifications that ensure these devices will achieve 98 percent destruction efficiency. As with the HON, we are not promulgating a requirement to perform an initial performance test for boilers and process heaters larger than 44 megawatts (MW) because they operate at high temperatures and residence times. In general, the higher the temperature and residence time, the greater the level of HAP destruction that is achieved by a control device. Therefore, boilers and process heaters larger than 44 MW easily achieve the required 98 percent destruction efficiency or the alternative requirement to reduce outlet concentrations below 20 ppmv.

For all other types of control devices, the final rule requires you to conduct a performance test to demonstrate that the control device can achieve the required control level and to establish operating parameters to be maintained to demonstrate continuous compliance. The testing requirements for semiconductor manufacturing list the parameters that can be monitored for the common types of combustion devices. For other

control devices, we require that you establish site-specific parameter ranges for monitoring purposes through the Notification of Compliance Status report and through the facility's operating permit. Parameters selected are required to be good indicators of continuous control device performance.

VII. What notification, recordkeeping, and reporting requirements must I follow?

We are promulgating notification, recordkeeping, and reporting requirements in accordance with 40 CFR part 63, subpart A and other previously promulgated NESHAP for similar source categories.

We are requiring that owners or operators of semiconductor manufacturing affected sources submit the following four types of reports: an Initial Notification report, a Notification of Compliance Status report, periodic compliance reports, reports of changes and other specified events. Records of reported information and other information necessary to document compliance with the promulgated standards are required to be kept for 5 years. Equipment design records would be required to be kept for the life of the equipment.

For the Initial Notification report, we are

requiring that you list the semiconductor manufacturing operations at your facility, and the provisions of the final rule that may apply. The Initial Notification report must also state whether your facility can achieve compliance by the specified compliance date. You must submit this notification by [INSERT THE DATE 1 YEAR AFTER THE PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER] for existing sources, and within 180 days before commencement of construction or reconstruction of an affected source.

For the Notification of Compliance Status report, we are requiring that you submit the information necessary to demonstrate that compliance has been achieved, such as the results of performance tests and design analyses. For each test method that you use for a particular kind of emission point (e.g., process vent), you must submit one complete test report. This notification must also include the specific range established for each monitored parameter for each emission point for demonstrating continuous compliance, and the rationale for why this range indicates proper operation of the control device.

We are requiring that you submit semiannual compliance reports. These reports must include a

statement that no deviations from the emission limitations occurred during the reporting period, and that no continuous monitoring system (CMS) was inoperative, inactive, malfunctioning, out-of-control, repaired, or adjusted. Additionally, a statement must be included if you had a startup, shutdown, or malfunction during the reporting period, and you took actions consistent with your SSMP. For process and storage tank vents, records of continuously monitored parameters must be kept. Records that such inspections or measurements were performed must be kept, but results are included in your periodic report only if there is a deviation from the operating limit. For each deviation from an emission limit, the semiannual compliance reports must document the time periods of each deviation; its cause; whether it occurred during a period of startup, shutdown, or malfunction; and whether and what time periods the CMS was inoperative or out of control.

We are requiring that you submit an immediate startup, shutdown, and malfunction report if you had a startup, shutdown, or malfunction that is not consistent with your SSMP.

Other reporting requirements include reports to

notify the regulatory authority before or after a specific event (e.g., if a process change is made, requests for extension of repair period).

VIII. What are the environmental, energy, and economic impacts of the final rule?

This section presents projected impacts for existing sources only. We did not calculate impacts for new sources because we do not project any new major sources will commence construction in the foreseeable future. We expect that any new sources will have HAP emissions below major source thresholds. The industry trend over the past several years has been that HAP emissions have decreased while semiconductor production has increased. As a result, only one source in the industry is still a major source of HAP, and only because it is collocated at a facility with other HAP-emitting operations. We do not project that any other new semiconductor sources will be built on the site of another major HAP emitting operation. We also project that the types of technologies that have evolved (e.g., producing larger wafers), which are in general emit fewer HAP per chip manufactured, will continue.

A. What are the secondary and energy impacts?

We do not anticipate any significant increase in national annual energy usage as a result of the final rule. Energy impacts include changes in energy use, typically increases, and secondary air impacts associated with increased energy use. Increases in energy use are associated with the operation of control equipment—in this case, the use of thermal oxidizers and scrubbers—to control process vents. Secondary air impacts associated with increased energy use are the emission of particulates, sulfur oxides (SO_X), and nitrogen oxides (NO_X). These secondary impacts are associated with power plants that would supply the increased energy demand. Since we project the final rule will apply to only one existing major source, no significant new control equipment requirements are expected. Therefore, secondary and energy impacts will be negligible.

B. What are the cost impacts?

Although we estimate there are approximately 127 facilities engaged in semiconductor production, we estimate that the source category contains only one existing major source subject to the regulatory provisions specified under the final rule. The remaining

facilities are either area sources or synthetic minor sources, which are sources that have the potential to emit above major source thresholds but have taken enforceable permit conditions limiting their HAP emissions to below these major source thresholds.

We estimate the annualized cost for the one major source affected by this final rule to be $2,300, solely to comply with monitoring, inspecting, reporting and recordkeeping requirements. (Note: This source meets the CAA section 112 definition of “major source” not because it emits 10 tons or more of any one HAP or 25 tons or more of HAP in aggregate, but because it is collocated at a plant site that is a major source subject to other NESHAP. We estimate this semiconductor manufacturing source emits less than one ton of HAP per year.) We project there will be no capital or operating costs for control equipment. Further, we estimate a one-time total cost of $33,000 for the approximately 126 non-major sources to read the rule. We estimate that there will be no impacts on new sources because we do not project that any new major sources will be built over the next 3 years.

C. What are the economic impacts?

The final rule applies to only one major existing source, and no significant new control equipment requirements are expected. We estimate the MIRR costs for this facility to be only $6,956 over a 3-year period. Therefore, no economic impact on the industry is expected.

IX. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), we must determine whether the regulatory action is "significant" and therefore subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise

interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligation of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review.

B. Paperwork Reduction Act

The information collection requirements in the final rule have been submitted for approval to OMB under the Paperwork Reduction Act, 44 U.S.C. 3501, et seq. An Information Collection Request (ICR) document has been prepared by EPA (ICR No. 2042.01) and a copy may be obtained from Susan Auby by mail at the Collection Strategies Division (2822), U.S. EPA, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, by e-mail at auby.susan@epa.gov, or by calling (202)566-1672. A copy may also be downloaded off the internet at

http://www.epa.gov/icr. The information requirements are not enforceable until OMB approves them.

The information requirements are based on notification, recordkeeping, and reporting requirements in the NESHAP General Provisions (40 CFR part 63, subpart A), which are mandatory for all operators subject to national emission standards. These recordkeeping and reporting requirements are specifically authorized by section 114 of the CAA (42 U.S.C. 7414). All information submitted to EPA pursuant to the recordkeeping and reporting requirements for which a claim of confidentiality is made is safeguarded according to Agency policies set forth in 40 CFR part 2, subpart B.

The annual monitoring, reporting, and recordkeeping burden for this collection, as averaged over the first 3 years after the effective date of the rule, is estimated to be 41 labor hours per year at a total annual cost of $2,319. This estimate includes a one-time plan for demonstrating compliance, annual compliance certification reports, notifications, and recordkeeping. Total labor burden associated with the monitoring requirements over the 3-year period of the ICR are estimated at $6,956.

Burden means the total time, effort, or financial

resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR, chapter 15. The OMB control number for the information collection requirements in this rule will be listed in an amendment to 40 CFR part 9 in a subsequent Federal Register document after OMB approves the ICR.

C. Regulatory Flexibility Act

The EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with the final rule. The EPA has also determined that this final rule will not have a significant economic impact on a substantial number of small entities. For purposes of assessing the impacts of this final rule on small entities, small entity is defined as: (1) a small business according to Small Business Administration (SBA) size standards for NAICS code 334413 (i.e., semiconductor crystal growing facilities, semiconductor wafer fabrication facilities, semiconductor test and assembly facilities) whose parent company has 500 or fewer employees; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's final rule on small entities, EPA has concluded that this action will not have a significant economic impact on a substantial number of small entities. Based on the above definition of small entities, the EPA has determined that

there are no small businesses within this source category that would be subject to the final rule.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rule with “Federal mandates” that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any 1 year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective, or

least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The EPA has determined that the final rule does not contain a Federal mandate that may result in expenditures of $100 million or more to State, local, and tribal governments, in the aggregate, or the private sector in any 1 year. The maximum total annual cost of the final rule for any year has been estimated to be about $35,800. Thus, the final rule is not subject to the requirements of sections 202 and 205 of the UMRA. In addition, EPA has determined that the standards contains no regulatory

requirements that might significantly or uniquely affect small governments because it contains no requirements that apply to such governments or impose obligations upon them.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled “Federalism” (64 FR 43255, August 10, 1999), requires the EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” are defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”

The final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, Executive Order 13132 does not apply

to the rule. Although section 6 of Executive Order 13132 does not apply to the rule, EPA did consult with State and local officials to enable them to provide timely input in the development of the final rule.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 9, 2000), requires the EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." The final rule does not have tribal implications, as specified in Executive Order 13175. No tribal governments own or operate semiconductor manufacturing facilities. Thus, Executive Order 13175 does not apply to the final rule.

G. Executive Order 13045: Protection of Children from Environmental Health & Safety Risks

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or

safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the EPA must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5-501 of the Executive Order has the potential to influence the regulation. The final rule is not subject to Executive Order 13045 because it is based on technology performance and not on an assessment of health or safety risks. Furthermore, the final rule has been determined not to be "economically significant" as defined under Executive Order 12866.

H. Executive Order 13211: Actions that Significantly Affect Energy Supply, Distribution, or Use

The final rule is not subject to Executive Order 13211 (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order

12866.

I. National Technology Transfer Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995 (Public Law No. 104-113; 15 U.S.C. 272 note) directs the EPA to use voluntary consensus standards in their regulatory and procurement activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, business practices) developed or adopted by one or more voluntary consensus bodies. The NTTAA directs EPA to provide Congress, through annual reports to the Office of Management and Budget (OMB), with explanations when an agency does not use available and applicable voluntary consensus standards.

The final rule involves technical standards. The EPA cites the following standards in this rule: EPA Methods 1, 1A, 2, 2A, 2C, 2D, 2F, 2G, 3, 3A, 3B, 4, 18, 25, 25A, 26, 26A, and 320. Consistent with the NTTAA, EPA conducted searches to identify voluntary consensus standards in addition to these EPA method. No applicable voluntary consensus standards were identified for EPA

Methods 1A, 2A, 2D, 2F, 2G. The search and review results have been documented and are placed in the docket A-97-15 for the final rule.

The voluntary consensus standard ASTM D6420-99, ”Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry (GC/MS),” is appropriate in the cases described below for inclusion in this rule in addition to EPA Method 18 codified at 40 CFR Part 60 Appendix A for the measurement of toluene and total organic HAP.

Similar to EPA’s performance-based Method 18, ASTM D6420-99 is also a performance-based method for measurement of gaseous organic compounds. However, ASTM D6420-99 was written to support the specific use of highly portable and automated GC/MS. While offering advantages over the traditional Method 18, the ASTM method does allow some less stringent criteria for accepting GC/MS results than required by Method 18. Therefore, ASTM D6420-99 is a suitable alternative to Method 18 only where: (1) the target compound(s) are

those listed in Section 1.1 of ASTM D6420-99, and (2) the target concentration is between 150 ppbv and 100 ppmv.

For target compound(s) ***not*** listed in Section 1.1 of ASTM D6420-99, ***but potentially detected by mass spectrometry***, the regulation specifies that the additional system continuing calibration check after each run, as detailed in Section 10.5.3 of the ASTM method, must be followed, met, documented, and submitted with the data report even if there is no moisture condenser used or the compound is not considered water soluble. For

target compound(s) ***not*** listed in Section 1.1 of ASTM D6420-99, and ***not*** amenable to detection by mass spectrometry, ASTM D6420-99 does not apply.

As a result, EPA will cite ASTM D6420-99 in this rule. The EPA will also cite Method 18 as a gas chromatography (GC) option in addition to ASTM D6420-99. This will allow the continued use of GC configurations other than GC/MS.

In addition to the voluntary consensus standard EPA cites in this rule, the search for emissions measurement procedures identified 14 other voluntary consensus standards. The EPA determined that 11 of these 14 standards identified for measuring emissions of the HAPs or surrogates subject to emission standards in this rule were impractical alternatives to EPA test methods for the purposes of this rule. Therefore, EPA does not intend to adopt these standards for this purpose. The reasons for this determination for the 11 methods are discussed in the docket.

Two of the 14 voluntary consensus standards identified in this search were not available at the time the review was conducted for the purposes of the final rule because they are under development by a voluntary

consensus body: ASME/BSR MFC 13M, “Flow Measurement by Velocity Traverse,” for EPA Method 2 (and possibly 1); and ASME/BSR MFC 12M, “Flow in Closed Conduits Using Multiport Averaging Pitot Primary Flowmeters,” for EPA Method 2.

The voluntary consensus standard ASTM D6348-98, "Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform (FTIR) Spectroscopy," has been reviewed by the EPA as a potential alternative to EPA Method 320. Suggested revisions to ASTM D6348-98 were sent to ASTM by the EPA that would allow the EPA to accept ASTM D6348-98 as an acceptable alternative. The ASTM Subcommittee D22-03 is currently undertaking a revision of ASTM D6348-98. Because of this, we are not citing this standard as a acceptable alternative for EPA Method 320 in the final rule today. However, upon successful ASTM balloting and demonstration of technical equivalency with the EPA FTIR methods, the revised ASTM standard could be incorporated by reference for EPA regulatory applicability. In the interim, facilities have the option to request ASTM D6348-98 as an alternative test method under 40 CFR 63.7(f) and 63.8(f) on a case-by-case basis.

Table 1 to subpart BBBBB lists the EPA testing methods included in the final rule. Under 40 CFR 63.7(f) and 63.8(f) of subpart A, a source may apply to EPA for permission to use alternative test methods or alternative monitoring requirements in place of any of the EPA testing methods, performance specifications, or procedures.

J. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801, et seq., as added by the SBREFA, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The EPA will submit a report containing the rule and other required information to the United States Senate, the United States House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the Federal Register. A major rule cannot take effect until 60 days after it is published

in the Federal Register. This action is not a "major rule" as defined by 5 U.S.C. 804(2). The rule will be effective [INSERT THE DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL_REGISTER].

List of Subjects in 40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements.

_____

Dated:

_____

Christine T. Whitman,
Administrator.

For the reasons stated in the preamble, title 40, chapter I, part 63 of the Code of the Federal Regulations is amended as follows:

PART 63--[AMENDED]

1. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401, et seq.

2. Part 63 is amended by adding subpart BBBBB to read as follows:

Subpart BBBBB–National Emission Standards for Hazardous Air Pollutants for Semiconductor Manufacturing

Sec.

What this Subpart Covers

Emission Standards

Compliance Requirements

What this Subpart Covers

§63.7180 What is the purpose of this subpart?

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for semiconductor manufacturing facilities. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission standards.

§63.7181 Am I subject to this subpart?

(a) You are subject to this subpart if you own or operate a semiconductor manufacturing process unit that

is a major source of hazardous air pollutants (HAP) emissions or that is located at, or is part of, a major source of HAP emissions.

(b) A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, considering controls, in the aggregate, any single HAP at a rate of 10 tons per year (tpy) or more or any combination of HAP at a rate of 25 tpy or more.

§63.7182 What parts of my facility does this subpart cover?

(a) This subpart applies to each new, reconstructed, or existing affected source that you own or operate that manufactures semiconductors.

(b) An affected source subject to this subpart is the collection of all semiconductor manufacturing process units used to manufacture p-type and n-type semiconductors and active solid-state devices from a wafer substrate, including research and development activities integrated into a semiconductor manufacturing process unit. A semiconductor manufacturing process unit includes the equipment assembled and connected by

ductwork or hard-piping including furnaces and associated unit operations; associated wet and dry work benches; associated recovery devices; feed, intermediate, and product storage tanks; product transfer racks and connected ducts and piping; pumps, compressors, agitators, pressure-relief devices, sampling connecting systems, open-ended valves or lines, valves, connectors, and instrumentation systems; and control devices.

(c) Your affected source is a new affected source if you commence construction of the affected source after May 8, 2002, and you meet the applicability criteria in §63.7181 at the time you commence construction.

(d) Your affected source is a reconstructed affected source if you meet the criteria for "reconstruction," as defined in §63.2.

(e) Your source is an existing affected source if it is not a new or reconstructed affected source.

§63.7183 When do I have to comply with this subpart?

(a) If you have a new or reconstructed affected source, you must comply with this subpart according to paragraphs (a)(1) and (2) of this section.

(1) If you start up your affected source before [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE

FEDERAL REGISTER], then you must comply with the emission standards for new and reconstructed sources in this subpart no later than [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER].

(2) If you start up your affected source after [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], then you must comply with the emission standards for new and reconstructed sources in this subpart upon startup of your affected source.

(b) If you have an existing affected source, you must comply with the emission standards for existing sources no later than 3 years from [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER].

(c) If you have an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP and an affected source subject to this subpart, paragraphs (c)(1) and (2) of this section apply.

(1) Any portion of your existing facility that is a new affected source as specified at §63.7182(c), or a reconstructed affected source as specified at §63.7182(d), must be in compliance with this subpart upon startup.

(2) Any portion of your facility that is an existing affected source, as specified at §63.7182(e), must be in compliance with this subpart by not later than 3 years after it becomes a major source.

(d) You must meet the notification requirements in §63.7189 and in subpart A of this part. You must submit some of the notifications (e.g., Initial Notification) before the date you are required to comply with the emission limitations in this subpart.

Emission Standards

§63.7184 What emission limitations, operating limits, and work practice standards must I meet?

(a) If you have a new, reconstructed, or existing affected source, as defined in §63.7182(b), you must comply with all applicable emission limitations in this section on and after the compliance dates specified in §63.7183.

(b) Process vents - organic HAP emissions. For each process vent that emits organic HAP, other than process vents from storage tanks, you must limit organic HAP emissions to the level specified in paragraph (b)(1) or (2) of this section. These limitations can be met by venting emissions from your process vent through a closed

vent system to any combination of control devices meeting the requirements of §63.982(a)(2).

(1) Reduce the emissions of organic HAP from the process vent stream by 98 percent by weight.

(2) Reduce or maintain the concentration of emitted organic HAP from the process vent to less than or equal to 20 parts per million by volume (ppmv).

(c) Process vents - inorganic HAP emissions. For each process vent that emits inorganic HAP, other than process vents from storage tanks, you must limit inorganic HAP emissions to the level specified in paragraph (c)(1) or (2) of this section. These limitations can be met by venting emissions from your process vent through a closed vent system to a halogen scrubber meeting the requirements of §§63.983 (closed vent system requirements) and 63.994 (halogen scrubber requirements); the applicable general monitoring requirements of §63.996; the applicable performance test requirements; and the monitoring, recordkeeping and reporting requirements referenced therein.

(1) Reduce the emissions of inorganic HAP from the process vent stream by 95 percent by weight.

(2) Reduce or maintain the concentration of emitted

inorganic HAP from the process vent to less than or equal to 0.42 ppmv.

(d) Storage tanks. For each storage tank, 1,500 gallons or larger, you must limit total HAP emissions to the level specified in paragraph (d)(1) or (2) of this section if the emissions from the storage tank vent contains greater than 0.42 ppmv inorganic HAP. These limitations can be met by venting emissions from your storage tank through a closed vent system to a halogen scrubber meeting the requirements of §§63.983 (closed vent system requirements) and 63.994 (halogen scrubber requirements); the applicable general monitoring requirements of §63.996; the applicable performance test requirements; and the monitoring, recordkeeping and reporting requirements referenced therein. (1) Reduce the emissions of inorganic HAP from each storage tank by 95 percent by weight.

(2) Reduce or maintain the concentration of emitted inorganic HAP from the process vent to less than or equal to 0.42 ppmv.

(e) You must comply with the applicable work practice standards and operating limits contained in §63.982(a)(1) and (2). The closed vent system inspection

requirements of §63.983(c), as referenced by §63.982(a)(1) and (2), do not apply.

Compliance Requirements

§63.7185 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the requirements of §63.7184 at all times, except during periods of startup, shutdown, or malfunction.

(b) You must always operate and maintain your affected source, including air pollution control and monitoring equipment, according to the provisions in §63.6(e)(1)(i).

(c) You must develop and implement a written startup, shutdown, and malfunction plan (SSMP). Your SSMP must be prepared in accordance with the provisions in §63.6(e)(3).

(d) You must perform all the items listed in paragraphs (d)(1) through (3) of this section:

(1) Submit the necessary notifications in accordance with §63.7189.

(2) Submit the necessary reports in accordance with §63.7190.

(3) Maintain all necessary records you have used to

demonstrate compliance with this subpart in accordance with §63.7191.

§63.7186 By what date must I conduct performance tests or other initial compliance demonstrations?

For each process vent or storage tank vent emission limitation in §63.7184 for which initial compliance is demonstrated by meeting a percent by weight HAP emissions reduction, or a HAP concentration limitation, you must conduct performance tests or an initial compliance demonstration within 180 days after the compliance date that is specified for your source in §63.7183 and according to the provisions in §63.7(a)(2).

§63.7187 What performance tests and other compliance procedures must I use?

(a) You must conduct each performance test in Table 1 to this subpart that applies to you as specified for process vents in §63.982(a)(2) and storage tanks in §63.982(a)(1). Performance tests must be conducted under maximum operating conditions or HAP emissions potential. Section 63.982(a)(1) and (2) only includes methods to measure the total organic regulated material or total organic carbon (TOC) concentration. The EPA Methods 26 and 26A are included in Table 1 to this subpart in

addition to the test methods contained within §63.982(a)(1) and (2). The EPA Method 26 or 26A must be used for testing regulated material containing inorganic HAP. Method 320 of 40 CFR part 63, appendix A, must be used to measure total vapor phase organic and inorganic HAP concentrations.

(b) If, without the use of a control device, your process vent stream has an organic HAP concentration of 20 ppmv or less or an inorganic HAP concentration of 0.42 ppmv or less, or your storage tank vent stream has an inorganic HAP concentration of 0.42 ppmv or less, you may demonstrate that the vent stream is compliant by engineering assessments and calculations or by conducting the applicable performance test requirements specified in Table 1 to this subpart. Your engineering assessments and calculations, as with performance tests (as specified in §63.982(a)(1) and (2)), must represent your maximum operating conditions or HAP emissions potential and must be approved by the Administrator. You must demonstrate continuous compliance by certifying that your operations will not exceed the maximum operating conditions or HAP emissions potential represented by your engineering assessments, calculations, or performance test.

(c) If you are using a control device to comply with the emission limitations in §63.7184 and the inlet concentration of HAP to the control device is 20 ppmv or less, then you may demonstrate that the control device meets the percent by weight HAP emission reduction limitation in §63.7184(c)(1) or (d)(1) by conducting a design evaluation as specified in paragraph (i) of this section. Your design evaluation must represent your maximum operating conditions or HAP emissions potential and must be approved by the Administrator. You must demonstrate continuous compliance by certifying that your operations will not exceed the maximum operating conditions or HAP emissions potential represented by your design evaluation.

(d) During periods of startup, shutdown, and malfunction, you must operate in accordance with your SSMP.

(e) For each monitoring system required in this section, you must develop and submit for approval a site-specific monitoring plan that addresses the criteria specified in paragraphs (e)(1) through (3) of this section.

(1) Installation of the continuous monitoring

system (CMS) sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device);

(2) Performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction system; and

(3) Performance evaluation procedures and acceptance criteria (e.g., calibrations).

(f) In your site-specific monitoring plan, you must also address the procedural processes in paragraphs (f)(1) through (3) of this section.

(1) Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1), (3), (4)(ii), (7), and (8);

(2) Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d); and

(3) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §63.10(c), (e)(1), and (e)(2)(i).

(g) You must conduct a performance evaluation of

each CMS in accordance with your site-specific monitoring plan.

(h) You must operate and maintain the CMS in continuous operation according to the site-specific monitoring plan.

(i) Design evaluation. To demonstrate that a control device meets the required percent by weight inorganic HAP emission reduction limitation in §63.7184(c)(1) or (d)(1), a design evaluation must address the composition of the inorganic HAP concentration of the vent stream entering the control device. A design evaluation also must address other vent stream characteristics and control device operating parameters as specified in any one of paragraphs (i)(1) through (5) of this section, depending on the type of control device that is used. If the vent stream is not the only inlet to the control device, the efficiency demonstration must also consider all other vapors, gases, and liquids, other than fuels, received by the control device.

(1) For a condenser, the design evaluation shall consider the vent stream flow rate, relative humidity, and temperature and shall establish the design outlet

organic HAP compound concentration level, design average temperature of the condenser exhaust vent stream, and the design average temperatures of the coolant fluid at the condenser inlet and outlet. The temperature of the gas stream exiting the condenser must be measured and used to establish the outlet organic HAP concentration.

(2) For a carbon adsorption system that regenerates the carbon bed directly onsite in the control device such as a fixed-bed adsorber, the design evaluation shall consider the vent stream flow rate, relative humidity, and temperature and shall establish the design exhaust vent stream organic compound concentration level, adsorption cycle time, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total regeneration stream mass or volumetric flow over the period of each complete carbon bed regeneration cycle, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon. For vacuum desorption, the pressure drop shall be included.

(3) For a carbon adsorption system that does not regenerate the carbon bed directly onsite in the control device such as a carbon canister, the design evaluation

shall consider the vent stream mass or volumetric flow rate, relative humidity, and temperature and shall establish the design exhaust vent stream organic compound concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

(4) For a scrubber, the design evaluation shall consider the vent stream composition, constituent concentrations, liquid-to-vapor ratio, scrubbing liquid flow rate and concentration, temperature, and the reaction kinetics of the constituents with the scrubbing liquid. The design evaluation shall establish the design exhaust vent stream organic compound concentration level and will include the additional information in paragraphs (i)(5)(i) and (ii) of this section for trays and a packed column scrubber.

(i) Type and total number of theoretical and actual trays;

(ii) Type and total surface area of packing for entire column, and for individual packed sections if column contains more than one packed section.

§63.7188 What are my monitoring installation, operation, and maintenance requirements?

If you comply with the emission limitations of §63.7184 by venting the emissions of your semiconductor process vent through a closed vent system to a control device, you must comply with the requirements of paragraphs (a) and (b) of this section.

(a) You must meet the applicable general monitoring, installation, operation, and maintenance requirements specified in §63.996.

(b) You must meet the monitoring, installation, operation, and maintenance requirements specified for closed vent systems and applicable control devices in §§63.983 through 63.995. If you used the design evaluation procedure in §63.7187(i) to demonstrate compliance, you must use the information from the design evaluation to establish the operating parameter level for monitoring of the control device.

Applications, Notifications, Reports, and Records

§63.7189 What applications and notifications must I submit and when?

(a) You must submit all of the applications and notifications in §§63.7(b) and (c); 63.8(e), (f)(4) and

(f)(6); and 63.9(b) through (e), (g) and (h) that apply to you by the dates specified.

(b) As specified in §63.9(b)(2), if you start up your affected source before [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], you must submit an Initial Notification not later than 120 calendar days after [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER].

(c) As specified in §63.9(b)(3), if you start up your new or reconstructed affected source on or after [INSERT THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], you must submit an Initial Notification not later than 120 calendar days after you become subject to this subpart.

(d) If you are required to conduct a performance test, you must submit a notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin as required in §63.7(b)(1).

(e) If you are required to conduct a performance test or other initial compliance demonstration, you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii) and according to paragraphs (e)(1) and

(2) of this section.

(1) For each initial compliance demonstration that does not include a performance test, you must submit the Notification of Compliance Status before the close of business on the 30th calendar day following the completion of the initial compliance demonstration. If you used the design evaluation procedure in §63.7187(i) to demonstrate compliance, you must include the results of the design evaluation in the Notification of Compliance Status.

(2) For each initial compliance demonstration required that includes a performance test conducted according to the requirements in Table 1 to this subpart, you must submit a notification of the date of the performance evaluation at least 60 days prior to the date the performance evaluation is scheduled to begin as required in §63.8(e)(2).

§63.7190 What reports must I submit and when?

(a) You must submit each of the following reports that apply to you.

(1) Periodic compliance reports. You must submit a periodic compliance report that contains the information required under paragraphs (c) through (e) of this

section, and any requirements specified to be reported for process vents in §63.982(a)(2) and storage tanks in §63.982(a)(1).

(2) Immediate startup, shutdown, and malfunction report. You must submit an Immediate Startup, Shutdown, and Malfunction Report if you had a startup, shutdown, or malfunction during the reporting period that is not consistent with your SSMP. Your report must contain actions taken during the event. You must submit this report by fax or telephone within 2 working days after starting actions inconsistent with you SSMP. You are required to follow up this report with a report specifying the information in §63.10(d)(5)(ii) by letter within 7 working days after the end of the event unless you have made alternative arrangements with your permitting authority.

(b) Unless the Administrator has approved a different schedule for submission of reports under §63.10(a), you must submit each report by the date according to paragraphs (b)(1) through (5) of this section.

(1) The first periodic compliance report must cover the period beginning on the compliance date that is

specified for your affected source in §63.7183 and ending on June 30 or December 31, whichever date is the first date following the end of the first 12 calendar months after the compliance date that is specified for your source in §63.7183.

(2) The first periodic compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date follows the end of the first 12 calendar months after the compliance date that is specified for your affected source in §63.7183.

(3) Each subsequent periodic compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) Each subsequent periodic compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

(5) For each affected source that is subject to permitting regulations pursuant to 40 CFR part 70 or 40 CFR part 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR

71.6(a)(3)(iii)(A), you may submit the first and subsequent periodic compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (b)(1) through (4) of this section.

(c) The periodic compliance report must contain the information specified in paragraphs (c)(1) through (5) of this section.

(1) Company name and address.

(2) Statement by a responsible official with that official’s name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) If there are no deviations from any emission limitations that apply to you, a statement that there were no deviations from the emission limitations during the reporting period and that no CMS was inoperative, inactive, malfunctioning, out-of-control, repaired, or adjusted.

(5) If you had a startup, shutdown, or malfunction during the reporting period and you took actions

consistent with your SSMP, your periodic compliance report must include the information in §63.10(d)(5) for each startup, shutdown, and malfunction.

(d) For each deviation from an emission limitation that occurs at an affected source where you are not using a CMS to comply with the emission limitations, the periodic compliance report must contain the information in paragraphs (d)(1) through (2) of this section.

(1) The total operating time of each affected source during the reporting period.

(2) Information on the number, duration, and cause of deviations (including unknown cause), if applicable.

(e) For each deviation from an emission limitation occurring at an affected source where you are using a CMS to demonstrate compliance with the emission limitation, you must include the information in paragraphs (e)(1) through (8) of this section.

(1) The date and time that each malfunction started and stopped, and the reason it was inoperative.

(2) The date and time that each CMS was inoperative, except for calibration checks.

(3) The date and time that each CMS was out-of-control, including the information in §63.8(c)(8).

(4) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period, and the cause of the deviation.

(5) A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.

(6) A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total source operating time during the reporting period.

(7) An identification of each HAP that was monitored at the affected source.

(8) The date of the latest CMS certification or audit.

§63.7191 What records must I keep?

(a) You must keep the records listed in paragraphs (a)(1) through (3) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Notification of Compliance Status and periodic report of compliance that you

submitted, according to the requirements in §63.10(b)(2)(xiv).

(2) The records in §63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunctions.

(3) Records of performance tests and performance evaluations as required in §63.10(b)(2)(viii).

(b) For each CMS, you must keep the records listed in paragraphs (b)(1) through (5) of this section.

(1) Records described in §63.10(b)(2)(vi) through (xi).

(2) All required measurements needed to demonstrate compliance with a relevant standard (e.g., 30-minute averages of CMS data, raw performance testing measurements, raw performance evaluation measurements).

(3) All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods).

(4) Records of the date and time that each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period.

(5) Records for process vents according to the requirements specified in §63.982(a)(2) and storage tank

vents according to the requirements specified in §63.982(a)(1).

§63.7192 In what form and how long must I keep my records?

(a) Your records must be in a form suitable and readily available for expeditious review, according to §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1). You can keep the records offsite for the remaining 3 years.

Other Requirements and Information

§63.7193 What parts of the General Provisions apply to me?

Table 2 to this subpart shows which parts of the General Provisions in §§63.1 through 63.13 apply to you.

§63.7194 Who implements and enforces this subpart?

(a) This subpart can be implemented and enforced by

us, the U.S. Environmental Protection Agency (EPA), or a delegated authority such as your State, local, or tribal agency. If the U.S. EPA Administrator has delegated authority to your State, local, or tribal agency, then that agency has the authority to implement and enforce this subpart. You should contact your U.S. EPA Regional Office to find out if this subpart is delegated to your State, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a State, local, or tribal agency under 40 CFR part 63, subpart E, the authorities contained in paragraph (c) of this section are retained by the U.S. EPA Administrator and are not transferred to the State, local, or tribal agency.

(c) The authorities that will not be delegated to State, local, or tribal agencies are as listed in paragraphs (c)(1) through (4) of this section.

(1) Approval of alternatives to the non-opacity emission limitations in §63.7184 under §63.6(g).

(2) Approval of major alternatives to test methods under §63.7(e)(2)(ii) and (f) and as defined in §63.90.

(3) Approval of major alternatives to monitoring under §63.8(f) and as defined in §63.90.

(4) Approval of major alternatives to recordkeeping and reporting under §63.10(f) and as defined in §63.90.

§63.7195 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, in §§63.2 and 63.981, the General Provisions of this part (40 CFR part 63, subpart A), and in this section as follows:

Control device means a combustion device, recovery device, recapture device, or any combination of these devices used for the primary purpose of reducing emissions to comply with this subpart. Devices that are inherent to a process or are integral to the operation of a process are not considered control devices for the purposes of this subpart, even though these devices may have the secondary effect of reducing emissions.

Process vent means the point at which HAP emissions are released to the atmosphere from a semiconductor manufacturing process unit or storage tank by means of a stack, chimney, vent, or other functionally equivalent opening. The HAP emission points originating from wastewater treatment equipment, other than storage tanks, are not considered to be a process vent, unless the wastewater treatment equipment emission points are

connected to a common vent or exhaust plenum with other process vents.

Semiconductor manufacturing means the collection of semiconductor manufacturing process units used to manufacture p-type and n-type semiconductors or active solid state devices from a wafer substrate, including processing from crystal growth through wafer fabrication, and testing and assembly. Examples of semiconductor or related solid state devices include semiconductor diodes, semiconductor stacks, rectifiers, integrated circuits, and transistors.

Semiconductor manufacturing process unit means the collection of equipment used to carry out a discrete operation in the semiconductor manufacturing process. These operations include, but are not limited to, crystal growing; solvent stations used to prepare and clean materials for subsequent processing or for parts cleaning; wet chemical stations used for cleaning (other than solvent cleaning); photoresist application, developing, and stripping; etching; gaseous operation stations used for stripping, cleaning, doping, etching, and layering; separation; encapsulation; and testing. Research and development operations associated with

semiconductor manufacturing and conducted at a semiconductor manufacturing facility are considered to be semiconductor manufacturing process units.

Storage tank means a stationary unit that is constructed primarily from nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to hold an accumulation of liquids or other materials used in or generated by a semiconductor manufacturing process unit. The following are not storage tanks for the purposes of this subpart:

(1) Tanks permanently attached to motor vehicles such as trucks, railcars, barges, or ships;

(2) Flow-through tanks where wastewater undergoes treatment (such as pH adjustment) before discharge, and are not used to accumulate wastewater;

(3) Bottoms receiver tanks; and

(4) Surge control tanks.

Tables to Subpart BBBBB of Part 63

As stated in §63.7187, you must comply with the requirements for performance tests in the following table:

TABLE 1 TO SUBPART BBBBB OF PART 63: REQUIREMENTS FOR PERFORMANCE TESTS

For . . .	You must. . .	Using . . .	According to the following requirements . . .
1. Process or storage tank vent streams.	a. Select sampling port's location and the number of traverse ports.	Method 1 or 1A of 40 CFR part 60, appendix A.	Sampling sites must be located at the inlet (if emission reduction or destruction efficiency testing is required) and outlet of the control device and prior to any releases to the atmosphere.
	b. Determine velocity and volumetric flow rate.	Method 2, 2A, 2C, 2D, 2F, or 2G of 40 CFR part 60, appendix A.	For HAP reduction efficiency testing only; not necessary for determining compliance with a ppmv concentration limit.
	c. Conduct gas molecular weight analysis.	i. Method 3, 3A, or 3B of 40 CFR part 60, appendix A.	For flow rate determination only.
		ii. ASME PTC 19.10-1981-Part 10	You may use ASME PTC 19.10-1981-Part 10 (available for purchase from Three Park Avenue, New York, NY 10016-5990) as an alternative to EPA Method 3B.
	d. Measure moisture content of the stack gas.	Method 4 of 40 CFR part 60, appendix A.	For flow rate determination and correction to dry basis, if necessary.

For . . .	You must. . .	Using . . .	According to the following requirements . . .
2. Process vent stream.	a. Measure organic and inorganic HAP concentra-tion (two method option).	i. Method 18, 25, or 25A of 40 CFR part 60, appendix A, AND ii. Method 26 or 26A of 40 CFR part 60, appendix A.	(1) To determine compliance with the percent by weight emission reduction limit, conduct simultaneous sampling at inlet and outlet of control device and analyze for same organic and inorganic HAP at both inlet and outlet; and (2) If you use Method 25A to determine the TOC concentration for compliance with the 20 ppmv emission limitation, the instrument must be calibrated on methane or the predominant HAP. If you calibrate on the predominant HAP, you must comply with each of the following: -The organic HAP used as the calibration gas must be the single organic HAP representing the largest percent of emissions by volume. -The results are acceptable if the response from the high level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on its most sensitive scale. -The span value of the analyzer must be less than 100 ppmv. To determine compliance with 98 percent reduction limit, conduct simultaneous sampling at inlet and outlet of control device and analyze

For . . .	You must. . .	Using . . .	According to the following requirements . . .
	c. Measure organic and inorganic HAP simultaneously (one method option).	Method 320 of 40 CFR part 63, appendix A.	To determine compliance with the percent by weight emission reduction limit, conduct simultaneous sampling at inlet and outlet of control device and analyze for same organic and inorganic HAP at both inlet and outlet.
3. Storage tank vent stream.	Measure inorganic HAP concentration	Method 26 or 26A of 40 CFR part 60, appendix A, or Method 320 of 40 CFR part 63, appendix A.	To determine compliance with percent by weight emission reduction limit, conduct simultaneous sampling at inlet and outlet of control device and analyze for same inorganic HAP at both inlet and outlet.

As stated in §63.7193, you must comply with the applicable General Provisions requirements according to the following table:

TABLE 2 TO SUBPART BBBBB OF PART 63: APPLICABILITY OF GENERAL PROVISIONS TO SUBPART BBBBB

Citation	Subject	Applicable to Subpart BBBBB?
§63.1	Applicability.	Yes
§63.2	Definitions.	Yes
§63.3	Units and Abbreviations.	Yes
§63.4	Prohibited Activities and Circumvention.	Yes
§63.5	Construction and Reconstruction.	Yes
§63.6	Compliance with Standards and Maintenance.	Yes
§63.7	Performance Testing Requirements.	Yes, with the exception of §63.7(e)(1). The requirements of §63.7(e)(1) do not apply. Performance testing requirements that apply are specified in this subpart, and in §63.982(a)(1) and (2).
§63.8	Monitoring Requirements.	Monitoring requirements are specified in this subpart and in §63.982(a)(1) and (2). The closed vent system inspection requirements of §63.983(c), as referenced by §63.982(a)(1) and (2), do not apply.

Citation	Subject	Applicable to Subpart BBBBB?
§63.9	Notification Requirements.	Yes
§63.10	Recordkeeping and Reporting Requirements.	Yes, with the exception of §63.10(e). The requirements of §63.10(e) do not apply. In addition, the recordkeeping and reporting requirements specified in this subpart apply.
§63.11	Flares.	Yes.
§63.12	Delegation.	Yes.
§63.13	Addresses.	Yes.
§63.14	Incorporation by Reference.	Yes.
§63.15	Availability of Information.	Yes.